FACT SHEET

United States Environmental Protection Agency, Region 10
1200 Sixth Avenue, M/S OWW-130
Seattle, Washington 98101

Permit No.: AK-004064-9 Date: April 15, 2005

PROPOSED REISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT (CWA) OF 1987.

Teck Cominco Alaska, Incorporated
(DeLong Mountain Regional Transportation System Port Facility, a.k.a. Red Dog Port Site)

has applied for reissuance of a NPDES permit to discharge pollutants pursuant to the provisions of the CWA. This Fact Sheet includes (a) the tentative determination of the Environmental Protection Agency (EPA) to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge and current and future sewage sludge practices, (d) a listing of tentative effluent limitations, monitoring requirements and other conditions, and (e) a detailed description and map of the facility and discharge locations. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the draft permit may do so by the expiration date of the Public Notice. All written comments should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Office of Water and Watersheds Director will make final determinations with respect to the permit reissuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the Public Notice period.

The permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determinations.

The draft NPDES permit, and other related documents, are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to the EPA at the above address to the attention of the NPDES Permits Unit, or by calling (206) 553-0176. This material is also available from the EPA Alaska Operations Office (Federal Building Room 537, 222 W. 7th Avenue, Suite #19, Anchorage, Alaska 99513) or the Alaska Department of Environmental Conservation in Fairbanks (610 University Avenue, Fairbanks, Alaska 99709-3643).

TABLE OF CONTENTS

APPENDICES

LIST OF ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AML	Average Monthly Limit
AWL	Average Weekly Limit
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CSB	Concentrate Storage Building
CV	Coefficient of Variation
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DMR	Discharge Monitoring Report
ELG	Effluent Limitation Guidelines
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FC	Fecal Coliform
gpm	gallons per minute
gpd	gallons per day
MDL	Method Detection Level
mgd	millions of gallons per day
ML	Minimum Level
MPN	Most Probable Number
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
PAC	Personnel Accommodations Complex
ppt	parts per thousand
QAP	Quality Assurance Plan
RWC	Receiving Water Concentration
STP	Sewage Treatment Plant
s.u.	Standard units
TSD	Technical Support Document (EPA 1991)
TSS	Total Suspended Solids
USF&WS	United States Fish and Wildlife Service
WET	Whole Effluent Toxicity
WLA	Waste Load Allocation
WQBEL	Water Quality-based Effluent Limitations

I. APPLICANT

Teck Cominco Alaska, Incorporated
(DeLong Mountain Regional Transportation System Port Facility, a.k.a. Red Dog Port Site)

Mailing Address:
3105 Lakeshore Drive
Building A, Suite 101
Anchorage, AK 99517

Facility Location:
T 25 N, R 24 W, Section 10 Kateel River Meridian
Northwest Arctic Borough
Kotzebue, AK 99752

Contact: Mark Thompson, Senior Environmental Coordinator

NPDES Permit No.: AK-004064-9

II. ACTIVITY

The Port Site supporting the Red Dog Mine (hereafter referred to as "Port Site") is located on the shore of the Chukchi Sea, approximately 17 miles southeast of Kivalina, Alaska. The Red Dog mining operation is a joint venture of Teck Cominco Alaska, Inc. (Teck Cominco), and the NANA Regional Corporation. The Port Site discharge is located at approximately 67^{o} 34' N latitude and 164^{o} 03' W longitude. The shipping of zinc and lead concentrate from the Red Dog Mine onto the Foss Maritime self-unloading shallow draft barges occurs at the Port Site, and the barges transfer the concentrate to oceangoing ships. The Red Dog Mine (Mine) and Port Site are connected by 52 miles of DeLong Mountain Regional Transportation System Road. The draft permit only covers the Port Site and DeLong Mountain Regional Transportation System Road (See Appendix A). Upon issuance of the previous permit, Teck Cominco predicted that the Mine and Port Site would be operational for an additional 50 years.

III. RECEIVING WATER

The effluent from the sewage treatment plant facility serving the personnel accommodations complex and the drinking water desalination plant are discharged via pipeline directly to the Chukchi Sea. The Chukchi Sea is designated in the State of Alaska Water Quality Standards (2003, 18 AAC 70.020(a)(2)) as protected for water supply; water recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life.

The treated mine drainage from around the facility's two concentrate storage buildings is also discharged to the Chukchi Sea. The previous NPDES permit allowed discharge

directly to the tundra and included limits protective of either a freshwater (tundra) or marine (Chukchi Sea) discharge. At the suggestion of ADEC, the tundra outfall has been eliminated, and the treated mine drainage has been rerouted from the tundra to the Chukchi Sea. The outfall joins the discharge from the sewage treatment plant and desalination plant outfall just prior to discharge to the Chukchi. The draft permit omits the authorization for discharge to the tundra and contains only marine limits.

IV. FACILITY DESCRIPTIONS AND DISCHARGES

A. Port Site Description

The Red Dog Port Site was established in 1989 to support the Red Dog Mine. Zinc and lead concentrates produced at the mine are transported over the DeLong Mountain Regional Transportation System (DMTS) Road to the Port Site, where they are transferred to oceangoing vessels on the Chukchi Sea for shipment to market. Fuel, equipment, chemical reagents, operating supplies, and construction materials are delivered to the Port Site by barge and transported over the DMTS road to the mine site. The Port Site receives supplies and fuel and ships concentrate only during the summer (open water seasons). Major facilities at the Port Site include:

- Concentrate facilities including two concentrate storage buildings (CSBs), a truck unloading building, surge bin, conveyor system, barge loader, and CSB drainage treatment system. The concentrate storage buildings are located 3,600 feet inland from the port loadout facilities.

- Ancillary facilities including a personnel accommodations complex (PAC) and offices, powerhouse/warehouse complex, drinking water and sewage treatment plants, bulk fuel storage facility, maintenance shop, solid waste landfill, material site, laydown yard and haul road.

B. Discharge Descriptions

1. Outfall 001: Personnel Accommodations Complex (PAC) Sewage Treatment Plant and Drinking Water Treatment Plant

The PAC plant discharges secondary treated domestic sewage and wastewater to the Chukchi Sea through outfall 001. Discharge is through a submerged pipeline fitted with a multi-port diffuser. Backwash from the Drinking Water Treatment Plant (desalination plant) joins outfall 001 prior to discharge to the diffuser.

PAC Sewage Treatment Plant (STP)

Wastewater receives secondary treatment via a membrane bioreactor process. Sewage entering the plant is first treated with soda ash to raise

the pH. It then passes through a rotostrainer to remove large solids and is aerated for biological activation. Effluent is then routed to a 12,000 gallon-per-day capacity Zenon "ZeeWeed" membrane filtration plant and disinfected with ultraviolet light. The Zenon plant is controlled by a programmable logic controller.

The STP was constructed in late 2000 and discharges effluent through outfall 001 at an average annual rate of approximately 1.4 million gallons per year. The STP outfall pipeline and the outfall 005 pipeline (ion exchange (IX) plant discharge, below) join on shore and discharge through the same submerged diffuser off Loading Cell 2.

The STP's annual average discharge rate is approximately 2.7 gallons per minute. The average design flow of the facility is 12,000 gallons/day. Variations in the operating parameters occur due to seasonal personnel changes. During the shipping season, when approximately 80 to 90 people are staying at the PAC, plant flow averages 6,000 to 7,500 gallons per day (gpd). During the winter season, when approximately 20 to 30 people occupy the PAC, flow averages about 2,500 gpd.

Sludge/biosolids production is minimal with the filtration system, which also provides digestion. Excess biosolids are transported in a 900-gallon STP trailer tank to a 1,000-gallon holding tank for aeration, and then are gravity fed to a 500-gallon tank for thickening with a flocculant. The thickened biosolids are dewatered in an automatic filter press, collected in biohazard bags, weighed, and co-incinerated with other wastes (food, putrescible wastes). Ash is disposed of in the solid waste landfill at Material Site 2 (MS-2) in accordance with Solid Waste Disposal permit 0132-BA003 and the *Teck Cominco Biosolids Project Plan*. The permit proposes to allow continued disposal of the created sludge/biosolids from the STP by co-incineration.

Drinking Water Treatment Plant

The drinking water treatment plant (desalination plant) is located in the southwest corner of the powerhouse building. Water from the Chukchi Sea is drawn through two wells installed in the beach north of the conveyor, filtered to remove total suspended solids, and pumped up to the plant. The water passes through a sand filter prior to entering the desalination (desal) units where it undergoes reverse osmosis and chemical treatment. Sodium bisulfite and an antiscalant are added to the desal units to inhibit bacterial growth on the membranes and to promote flocculation of particulates. Water leaving the desal units has calcium carbonate added for pH adjustment and calcium hypochlorite (chlorine) added via an automatic injection system for sanitation and disinfection. After a final polishing stage, treated water is pumped into two potable

water tanks for distribution to the PAC and other small buildings at the Port site.

The draft permit authorizes the discharge of desal backwash brine via outfall 001 to the Chukchi Sea. The average desalination plant discharge is 5,040 gpd during the non-shipping season and 6,500 gpd during shipping season. The design capacity of the plant is 40,320 gpd.

2. Outfall 005: Mine Drainage Past the Concentrate Storage Buildings

Concentrates are delivered year-round to two Concentrate Storage Buildings (CSBs). Each of the two CSBs are completely enclosed steel-engineered facilities located on five feet thick gravel pads. The buildings are approximately 218 feet wide, 140 feet high and 1,425 feet long (CSB-2 is 1,200 feet long). The CSBs provide storage for zinc and lead concentrates, allowing for an accumulation during the winter months when ocean shipping of concentrates is not possible. The CSBs protect the concentrates from the weather and contain fugitive dust emissions. Together the buildings can hold all of the concentrates produced in about nine months of mill operations. Two garage-type door portals, at both ends of the buildings, provide access for equipment to the building. A separate truck unloading building, with garage doors at both ends is used to unload onto an enclosed conveyor system, which transports the concentrates to stockpiles within each building. Before the vehicles exit the CSBs, they are washed down and the dirty water is sent through a separator and recycled for reuse on the next vehicle. Periodically the sludge and dirty water from the washing operation are collected in a sump and transported to the mine for reprocessing. During open-water seasons, concentrates are transported from the CSBs to the offshore loading facility by another enclosed conveyor system.

Runoff from the area immediately surrounding the CSBs contains metals and has been characterized by EPA as “mine drainage.” A CSB drainage treatment system, including a storm water/groundwater collection system, a filtration system, and an ion exchange (IX) plant, gathers and treats metals-laden drainage water before discharge to the Chukchi Sea. The treated discharge flows through a pipeline along the conveyor alignment, joins onshore with the outfall 001 pipeline, and the combined effluent is discharged to an offshore underwater diffuser attached to Loading Cell 2. Teck Cominco has supplied estimated data suggesting that the maximum amount of drainage from around the CSBs is 750 gpm during spring and summer.

3. DeLong Mountain Regional Transportation System Road

The draft permit also covers storm water runoff from the 52-mile long haul road connecting the mine to the Port Site. Supplies, concentrate, fuel,

and mine and port personnel travel along the road on a daily basis. Teck Cominco is the sole user of the road and has a full time crew for maintenance purposes. Operation and maintenance is performed in accordance with the *DeLong Mountain Regional Transportation System Operating & Maintenance Plan*. Storm water runoff from the road is protected from potential contamination by the use of best management practices referenced in the *Red Dog Port Site Best Management Practices Plan*. The road is constructed from local rock, and dust is controlled through the addition of calcium chloride, watering, and aggregate base renewal from gravel pits along the route. No additional chemicals are added to the road surface. The road has nine bridges that pass over creeks and numerous culverts to allow seasonal drainage to follow its natural course.

V. BACKGROUND

NPDES Permit No. AK-004064-9 was first issued for the Red Dog Port Site on August 21, 1986. The NPDES permit, by its terms, expired on August 20, 1991. The permit was issued to Cominco Alaska, Inc. Because Cominco's application for renewal was not signed, EPA could not administratively extend the permit. Cominco submitted updated permit applications on October 1, 1991; September 30, 1992; January 24, 1996; and August 12, 1996. EPA and Cominco entered into a settlement of EPA's claims relating to the numerous violations of pH, 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS) problems from mid-1990 through mid-1994. The terms of the settlement were incorporated into a Consent Decree entered by the U.S. District Court for Alaska, after public notice, on November 25, 1997. The Consent Decree provided for interim effluent limits based on the 1986 NPDES permit, with those interim effluent limits to expire when the next NPDES permit was issued. From mid-1994 through the 1999 reissuance of the permit, Cominco was generally in compliance with the 1986 permit conditions (with only one reported pH violation).

The most recent permit was issued on January 29, 1999 and expired on January 29, 2004. In July 2001, Cominco Alaska, Inc. merged with Teck and the company became Teck Cominco Alaska, Inc. Teck Cominco submitted an updated application in July 2003. EPA accepted the application in August 2003 and administratively extended the permit.

In response to numerous violations of the previous permit in early 1999, the EPA issued a Request for Information and Compliance Order to the company on August 24, 1999. It contained a compliance schedule for upgrade of the treatment facilities on both outfalls. The company complied with the Order, and the facility has generally been in compliance with the previous permit limits since installation of the current treatment systems.

The last outfall 001 exceedence was in January 2001 during startup of the Zenon STP when the BOD_5 slightly exceeded the weekly average limit.

Outfall 005 experienced violations of daily maximum zinc and cadmium limits on

September 15, 2004. These violations were unusual and were attributed to sample contamination or plant upset. Prior to that were two instances of elevated total suspended solids during the spring breakup of 2003. In 2002, Teck Cominco had installed several filtration units upstream of the IX plant to help control TSS during breakup. As a result of the 2003 violation and to permanently address the TSS issue, Teck Cominco installed additional bag filters and a turbidity meter for real-time operating capability. The company also implemented testing for the optimum filter bag pore size, training for the operators, and an update of the standard operating procedures.

There have been occasional discharges from the IX plant outfall line (005) to the tundra, most of which occurred in 2001 and 2002. The discharges (backups or breaks) have been attributed to weather conditions. Measures have been taken to eliminate unplanned discharges from the line.

The EPA brought a complaint against the company alleging that ore concentrate from the conveyor system to the barges was discharged to the Chukchi Sea three times in August 2002. Teck Cominco has invested approximately $16 million over the past three years to control these fugitive dust emissions and has begun using a full-scale Environmental Management System (EMS) based on EPA standards and ISO 14001. EPA and the company reached a settlement to the complaint in February 2005. The draft permit requires submittal of a Best Management Practices (BMP) Plan to further control these discharges (See Section IX.A.).

VI. BASIS FOR EFFLUENT LIMITS

A. General Authority

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates discharges with respect to these sections of the CWA, relevant NPDES regulations, and state water quality standards in determining which conditions to include in the permit.

In general, EPA first determines which technology-based limits are required to be incorporated into the permit (40 CFR 122.44(a)). The EPA may find, by analyzing the effects of a discharge on the receiving water, that technology based effluent limits are not sufficiently stringent to meet water quality standards. In such cases, EPA regulations at 40 CFR 122.44(d)(1) require the development of more stringent water quality-based limits designed to ensure that those water quality standards are met. The draft permit limits will thus reflect whichever limits (technology-based or water quality-based) are most stringent.

The limits that the EPA is proposing in the permit for each parameter are further discussed in Section VI.D.

B. Applicable Technology-based Limits

1. PAC Sewage Treatment Plant

Technology-based limits for sewage treatment works performing secondary treatment are defined in federal regulation 40 CFR 133.102 as follows:

TABLE VI-1 Secondary Treatment Technology-based Limitations

Parameter	Monthly Average (mg/L)	Weekly Average (mg/L)	Percent Removal (%)
BOD_5	30	45	85
TSS	30	45	85
pH	within the range of 6.0 -9.0		

According to the EPA's best professional judgment (BPJ), the BOD_5 and TSS limitations provide the baseline requirements for the PAC sewage treatment plant. These limitations have been placed in the permit.

Limits are also expressed in terms of mass, or loading. The mass limits are determined by multiplying the appropriate concentration in mg/L by the design flow in mgd and a conversion factor of 8.34 (to convert from mg/L and mgd to lbs/day). Mass limits calculated for the draft permit have decreased from those in the previous permit due to the decrease in flow and wasteload that occurred with closure of the temporary construction camp (discussed in VI.D.1.a. below).

2. Concentrate Storage Building Mine Drainage

The CWA requires particular categories of industrial dischargers to meet technology-based Effluent Limitation Guidelines (ELGs) established by the EPA. The intent of a technology-based effluent limit is to require a minimum level of treatment for industrial point sources that is based on currently available treatment technologies while allowing the discharger to use any available control technology to meet the limitations. The national ELGs are developed based on demonstrated performance of a reasonable level of treatment that is within the economic means of specific categories of industry.

The federal ELGs applicable to the Port Site mine drainage are found in 40 CFR Part 440, Subpart J - Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory. Specifically, 40 CFR Part 440.104 - Effluent Limitations, represents the degree of effluent reduction attainable by the application of ELGs. These technology-based limitations for

copper, zinc, lead, mercury, cadmium, pH, and TSS are presented in the following Table VI-2.

TABLE VI-2 40 CFR Part 440.104 ELGs

Effluent Parameter	Effluent Limitations	
	Daily Maximum Limit (mg/L)	Average Monthly Limit (mg/L)
Copper	0.30	0.15
Zinc	1.5	0.750
Lead	0.6	0.3
Mercury	0.002	0.001
Cadmium	0.1	0.05
pH	6.0	- 9.0
Total Suspended Solids	30.0	20.0

C. Water Quality-Based Effluent Limits

1. Statutory Authority

Section 301(b)(1)(C) of the CWA requires the establishment of permit limits necessary to meet water quality standards. Discharges to state waters must also comply with limitations imposed by the State as part of its certification of NPDES permits under section 401 of the CWA.

NPDES regulation 40 CFR 122.44(d)(1) requires that permits include limits on all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." Regulations require that this evaluation be made using procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and dilution in the receiving water (where appropriate). The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

The regulations also specifically address when toxicity and chemical-specific limits are required. These limits are required whenever the

discharge has the reasonable potential to cause or contribute to an excursion above either a numeric or narrative standard for toxicity. Toxicity limits are not required when chemical-specific limits can fully achieve the narrative toxicity standard.

The sections below provide a detailed discussion of the steps involved in developing water quality-based effluent limits (WQBEL).

2. "Reasonable Potential" Evaluation

To determine if WQBELs are needed for individual pollutants, the EPA statistically compares applicable state water quality criteria to the maximum expected receiving water concentrations for a particular pollutant according to Chapter 3 of EPA's 1991 *Technical Support Document for Water Quality-based Toxics Control* (TSD). If the expected receiving water concentration exceeds the criteria, a WQBEL must be included in the permit.

The maximum expected receiving water concentration is calculated based on dilution, or the mixing zone (if available and allowed by the State), the maximum reported effluent concentration, and a multiplier to account for uncertainty in the effluent. The multiplier is used to predict a maximum *expected* effluent concentration from the maximum *reported* concentration. The multiplier decreases as the number of effluent data points increases and as the variability of the data decreases. Variability of the effluent is expressed as the coefficient of variation (CV) of the effluent data. When there are not enough data (less than 10 samples) to reliably determine a CV, the TSD recommends using 0.6 as a default value. See Appendix B for formulas and spreadsheets.

3. Permit Limit Derivation

Where the EPA has determined that there is "reasonable potential" to cause or contribute to an exceedence of the criteria, the Agency applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain the water quality-based permit limits (See Appendices C, D, and E). This derivation takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and daily maximum limits.

In order to develop WQBELs, waste load allocations (WLAs) must first be determined. A WLA is the concentration (or loading) of a pollutant that may be discharged by a Permittee without causing an exceedence of water quality criteria in the receiving water.

Because the different criteria (acute aquatic life, chronic aquatic life, and

human health) apply over different time frames and may have different mixing zones, it is not possible to compare them directly to determine which criterion results in the most stringent limits. For example, the acute criteria are applied as a one-hour average and may have a smaller mixing zone, while the chronic criteria are applied as a four-day average and may have a larger mixing zone. To allow for comparison, each criterion is statistically converted to a long-term average effluent concentration. This conversion is dependent upon the coefficient of variation (CV) of the effluent data and the probability basis used. The probability basis corresponds to the percentile of the estimated concentration. The EPA uses a 99th percentile for calculating a long-term average, as recommended in the TSD. Based on this analysis, the criterion that results in the most stringent effluent concentration is the WLA that is used to calculate the permit limits.

Wasteload allocations for the draft permit were based on draft allowable mixing zones provided by ADEC.

4. Mixing Zones

The State often authorizes mixing zones in situations where the receiving water quality meets State water quality standards. Mixing zones allow for ambient concentrations above the criteria in small areas near the outfall(s) where initial dilution of a discharge takes place. The mixing zones do not impair the integrity of the water body as a whole, do not allow lethality to organisms passing through, and do not pose any serious health risks considering likely pathways of exposure.

During the previous permit, ADEC designated a mixing zone for Outfalls 001 and 005 for the protection of marine aquatic life. The dilution ratio at the chronic mixing zone boundary was 446:1. For the proposed draft permit, ADEC re-modeled the mixing zones using the EPA PLUMES model. ADEC determined that 446:1 was not as small as practicable per 18 AAC 70.240(a)(2) when modeled with more recent discharge information and updated criteria. The dilution factors determined to be protective of water quality criteria for metals, ammonia nitrogen, whole effluent toxicity, and total residual chlorine were 140:1 for the chronic mixing zone and 92:1 for the acute mixing zone. The parameters most limiting the size of the mixing zones were lead, on which the chronic dilution factor was based; zinc, which drove the acute dilution factor during the ice-free period of the year; and chlorine, which was the controlling parameter in the winter (outfall 001 discharge only). The designated chronic mixing zone is a rectangle 50 meters by 20 meters, and the acute mixing zone is a rectangle 13 meters by 20 meters.

5. Water Quality Criteria

Table VI-3 lists the parameters and applicable marine criteria adopted by the ADEC. The metals criteria are expressed in terms of dissolved metals. Ammonia criteria are calculated using temperature, pH, and salinity (see spreadsheets in Appendix B).

TABLE VI-3 Applicable Marine Water Quality Criteria

Parameter	Aquatic Acute	Aquatic Chronic
Cadmium (μg/L)	40.0	8.8
Lead (μg/L)	210.0	8.1
Zinc (μg/L)	90.0	81.0
Copper (μg/L)	4.8	3.1
Mercury (μg/L)	1.8	0.94
Total Residual Chlorine (μg/L)	13.0	7.5
Ammonia as N (mg/L, calculated)	28.46	4.27
pH (s.u.)	6.5 -	8.5

6. Receiving Water

The previous permit required ambient monitoring of the Chukchi Sea to determine background pollutant concentrations for development of WLAs. Ambient parameters sampled were cadmium, copper, lead, mercury, zinc, total suspended solids, salinity, and fecal coliform. Data collection occurred from July 1999 through August 2004 at three seawater sampling sites near the boundaries of the fecal coliform mixing zone. Some of the metals data, primarily copper, indicated that the seawater sampling sites might not be representative of background concentrations due to high pollutant concentrations. A fourth site, an ambient reference site farther from the facility, was selected for comparison and was sampled in October 2004. Cadmium, mercury and lead results were similar between the original sampling area and the new ambient reference site. Copper and zinc values, however, were lower at the ambient reference site. The proposed permit will include a requirement to update the Quality Assurance Plan (QAP) to find and monitor a site representative of the ambient water quality in the Chukchi Sea (See Secs. VIII.A. and VIII.F.). In addition to the question of representative samples, ambient copper samples split and analyzed using two different laboratory methods showed

significantly different results between the methods. The updated QAP shall also include an evaluation of copper methods to determine the accurate method for the matrix (See Section VIII.A.).

In calculating reasonable potential and permit limits, EPA used the receiving water data collected from 2001 through 2004 at the original seawater sampling sites. Although data was available from 1999 and 2000, it is EPA's best professional judgment that data collected after installation of the ion exchange plant (2001) would better represent current conditions. Data from the new ambient reference site was not used for permit calculations because the site was sampled only one time.

D. Effluent Limit Calculations

This section describes the technology-based effluent limits, WQBELs, and assumptions that EPA used to calculate the draft permit limits.

1. Outfall 001: PAC and Desalination Plant Limitations

a. Biochemical Oxygen Demand and Total Suspended Solids

Alaska wastewater disposal regulation 18 AAC 72.050 requires secondary treatment of domestic wastewater unless a reduced treatment level is established by ADEC in response to a request by the applicant. Therefore, the draft permit contains EPA's secondary treatment effluent limitations described at 40 CFR 133.102 as BPJ (See Section VI.B.1.). The draft permit contains BOD_5 and TSS average monthly limits (AML) of 30 mg/L, and average weekly limits (AWL) of 45 mg/L. BOD_5 and TSS average monthly removal shall be greater than or equal to 85 percent. The 1999 Port Site permit contained the same AWL and AML for BOD_5 and TSS. A review of the facility's discharge monitoring reports (DMRs) indicated that the facility has consistently achieved compliance with these limits.

40 CFR 122.45(f) requires that NPDES permits contain mass-based limits for such pollutants as BOD_5 and TSS. The proposed mass, or loading, limits are based on the design capacity of the STP. These limits were calculated by multiplying the design flow (0.012 mgd) by the concentration limits (30 or 45 mg/L) and a conversion factor (8.34), as shown below. Mass limits have decreased from the previous permit because the temporary construction camp STP has been moved to the mine site, eliminating half of the design flow and wasteload to the PAC STP.

Monthly Average Load: = (0.012 mgd)(30 mg/L)(8.34)
= 3.0 lbs/day

Weekly Average Load : = (0.012 mgd)(45 mg/L)(8.34)

= 4.5 lbs/day

b. pH

According to 40 CFR 133.102, the technology-based pH limitation for secondary treatment facilities is from 6.0 to 9.0 standard units (s.u.). However, Alaska water quality standard (18 AAC 70.020(b)(18)) requires pH values to be within 6.5 to 8.5 s.u. for the protection of aquaculture water supply; growth and propagation of fish, shellfish, other aquatic life, and wildlife. The Port Site's 1999 permit included this pH requirement, and the facility consistently met the limit. The draft permit requires the more stringent requirement, and the pH shall be limited to 6.5 - 8.5 s.u.

c. Fecal Coliform Bacteria

The fecal coliform (FC) limits in the draft permit are based on conversation and correspondence with the state. Alaska Water Quality Standard (18 AAC 70.020(b)(14)) states that for harvesting and consumption of raw mollusks or other raw aquatic life that the FC median, most probable number (MPN) concentration may not exceed 14 FC/100 ml based on a 5-tube decimal dilution test. The Alaska Water Quality Standards for water supply aquaculture (products not normally cooked) and seafood processing requires that, based on a minimum of five samples taken in a 30-day period, not more than 10% of the samples may exceed 40 FC/100 ml.

The 1999 Port Site NPDES permit included limits of 400 FC/100 ml monthly average, 800 FC/100 ml weekly average, and 1200 FC/100 ml daily maximum. The draft permit will contain those limits, also, as they are more stringent than limits calculated using the chronic and acute dilution factors (140:1 and 92:1, respectively) which were used for the other parameters.

d. Cadmium, Lead, Zinc, and Ammonia Nitrogen

Data from monitoring performed during the previous permit cycle indicated no reasonable potential for cadmium, lead, zinc, or ammonia nitrogen to exceed the water quality criteria at the edge of the applicable mixing zone (See Appendix B). Reasonable potential was evaluated using the maximum effluent concentration for each parameter, the 95th percentile values of the receiving water data collected from 2001 through 2004 (for metals), and assumed effluent coefficients of variation of 0.6. There was no ambient ammonia nitrogen data, so zero was used as an ambient value. Since there was no reasonable potential demonstrated and there are no applicable technology-based secondary treatment guidelines, no limits for these parameters will be placed in the permit for 001.

e. Total Residual Chlorine Water Quality-based Limits

The previous permit did not contain total residual chlorine limits because the facility uses ultraviolet (UV) disinfection. However, the facility used chlorine to back wash the PAC plant as a part of the regular maintenance. On January 10, 2002 EPA issued a Modified Request for Information and Compliance Order stating that the chlorine discharge constituted a "discharge of pollutants" from a point source within the meaning of Section 502(12) of the Clean Water Act, 33 U.S.C. § 1362(12). The Order limited the chlorine discharge from Outfall 001 to 0.1 mg/L (100 μg/L), which the facility complied with until discontinuing the practice in October 2002. At that time, Teck Cominco instituted an offline dip system for maintaining the filters. The current permit application stated that the facility would like to resume using chlorine for maintenance of the Zenon filters, so it was necessary to evaluate limitations for the facility. Water quality-based limits were calculated using zero as the receiving water concentration, an assumed CV of 0.6, the acute LTA, the approved mixing zones, and 12 samples per month (based on reported daily or every-other-day filter maintenance). The calculated water quality-based AML for total residual chlorine is 502 μg/L, and the MDL is 1196 μg/L. Technology-based chlorine effluent limitations derived by EPA Region 10 from standard domestic wastewater treatment operating practices (AML = 500 μg/L, MDL = 1,000 μg/L) are more stringent than the water quality-based limits and shall be placed in the permit. These technology-based chlorine limits are based upon EPA's NPDES General Permit titled "Small Publicly Owned Treatment Works (POTW) and Other Small Treatment Works Providing Secondary Treatment of Domestic Sewage and

Discharging to Marine Water."

f. Human Health

Zinc was the only known outfall 001 parameter with ADEC human health criteria. "Aquatic Organisms Only" Zinc criteria, used for marine applications, is 69,000 μg/L. Based on the maximum total recoverable zinc effluent concentration of 507 μg/L, the ambient concentration geometric mean of 18.57 μg/L, and the chronic dilution factor, a determination of no reasonable potential to exceed zinc human health criteria was made (See Appendix D).

g. Floating, Suspended or Submerged Matter

The draft permit contains a narrative limit, consistent with State water quality standard 18 AAC 70.020(b)(20). This narrative limit requires that the Permittee not discharge floating solids, debris, sludge, foam, scum, or other residues which produce a film, sheen, or discoloration on the surface of the receiving water. Residuals also may not cause leaching of toxic or deleterious substances, or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

h. Summary of Outfall 001 limits

Table VI-4 summarizes the draft numerical permit limits for 001.

Table VI-4 Effluent Limitations for Outfall 001

Parameter	Daily Maximum	Weekly Average	Monthly Average
BOD_5 (mg/L)	---	45.0	30.0
(lbs/day)[1]		4.5	3.0
TSS (mg/L)	---	45.0	30.0
(lbs/day)[1]		4.5	3.0
pH (s.u.)	6.5 – 8.5	---	---
Fecal Coliform (#/100 mL)	1200	800	400
Total Residual Chlorine (μg/L)	1000	---	500

[1] Percent removal requirements are as follows: for any month, the monthly average effluent load shall not exceed 15 percent of the monthly average influent load.

2. Outfall 005: Mine drainage (past concentrate storage buildings) Limitations

a. Mercury, Cadmium, Lead, Zinc, and Total Suspended Solids

Technology-based limits for mercury, cadmium, lead, zinc, and TSS were presented in Section VI.B.2. The technology-based limits for mercury, cadmium, lead, and zinc were compared to WQBELs and found to be more protective. Technology-based limits are therefore included as permit requirements for the 005 discharge. Effluent guidelines for TSS, which are more stringent than secondary treatment standards, will be placed in the permit, also.

b. pH

Alaska's water quality standard (18 AAC 70.020(b)(18)) for saltwater pH is within 6.5 and 8.5 s.u. for the protection of aquaculture water supply; growth and propagation of fish, shellfish, other aquatic life, and wildlife. These WQBELs are more stringent than the technology-based requirement of 6.0 - 9.0 (Section VI.B.2.). The facility was able to meet these limits in the previous permit, and they are included as permit requirements in the proposed permit.

c. Copper

Receiving water data prompted a determination of reasonable potential for copper to exceed the criteria, however, problems with the analytical methods cast doubt on the validity of the data. Technology-based copper limits shall be placed in the proposed permit, pending determination of the appropriate analytical method and receipt of representative ambient data. Reasonable potential shall be re-evaluated during the next permit reissuance.

d. Nickel and Selenium

No reasonable potential to exceed the criteria for nickel or selenium was demonstrated. There are no applicable technology-based effluent limits for nickel or selenium, so no limits will appear in the permit.

e. Chromium

EPA was unable to calculate reasonable potential for chromium – facility data was for total recoverable chromium, but water quality criteria are for dissolved chromium VI. The maximum effluent total recoverable chromium, however, was 0.2 μg/L, indicating that dissolved chromium VI was far below the 1,100 μg/L receiving water criteria.

f. Human Health

No reasonable potential to exceed human health criteria for cyanide (22,000 μg/L), manganese (100 μg/L), mercury (0.05 μg/L), nickel (4,600 μg/L), selenium (11,000 μg/L), or zinc (69,000 μg/L) was demonstrated. Reasonable potential was calculated using the ambient concentration geometric mean and maximum effluent concentration for each parameter (except zinc and mercury - 50^{th} percentile) and the chronic dilution factor (See Appendix D).

g. Floating, Suspended or Submerged Matter

The draft permit contains a narrative limit, consistent with State water quality standard 18 AAC 70.020(b)(20). This narrative limit requires that the Permittee not discharge floating solids, debris, sludge, foam, scum, or other residues which produce a film, sheen, or discoloration on the surface of the receiving water. Residuals also may not cause leaching of toxic or deleterious substances, or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

h. Summary of Outfall 005 Limits

The numeric effluent limits for outfall 005 have been developed for discharge to the Chukchi Sea and are summarized in Table VI-5.

TABLE VI-5 Effluent Limitations for Outfall 005

Parameter	Daily Maximum	Monthly Average
Copper (μg/L)	300.0	150.0
Zinc (μg/L)	1500.0	750.0
Lead (μg/L)	600.0	300.0
Mercury (μg/L)	2.0	1.0
Cadmium (μg/L)	100.0	50.0
pH (s.u.)	6.5 - 8.5	
TSS (mg/L)	30.0	20.0

E. Antidegradation

In proposing to issue this permit, the EPA has considered Alaska's antidegradation policy (18 AAC 70.015(a)). This provision states that the existing water uses and the level of water quality necessary to protect existing uses be maintained and protected. The provision also states that where the natural characteristics of the waterbody are higher than the water quality criteria, the existing quality must be maintained. The limits proposed for this permit were evaluated and determined to not affect the existing water uses of the Chukchi Sea. Therefore, the permit is consistent with Alaska's antidegradation policy.

VII. BIOSOLIDS

A. General Authority for Biosolids Management

Section 405(f) of the CWA requires any NPDES discharge permit issued to a "treatment work treating domestic sewage" to include biosolids use and disposal requirements implementing the national standards and other requirements of the CWA. In addition, the sludge permitting regulations in 40 CFR 122 and 124 apply to all treatment works which either generate, treat, or dispose of domestic septage or sewage biosolids. As a treatment works treating domestic sewage, the STPs are considered "biosolids generators."

Pursuant to 40 CFR 122.41(a) and Section 405(e) of the CWA, a condition has been incorporated into the draft permit requiring the Permittee to comply with all existing federal and state laws, and all regulations applying to biosolids use and disposal. This includes future self-implementing standards under the CWA.

B. Biosolids Management

The Permittee transports biosolids (sewage sludge) created by the PAC and mine construction personnel accommodations complex (ConPAC) STPs to either of the two Port Site co-incinerators for dewatering and co-incineration with municipal solid waste.

Biosolids from the PAC STP are transported in a 900-gallon STP trailer tank to a 1,000-gallon holding tank for aeration, and then are gravity fed to a 500-gallon tank for thickening with a flocculant. The thickened biosolids are dewatered in an automatic filter press, collected in biohazard bags, weighed, and co-incinerated with other wastes (food, putrescible wastes). Ash is disposed of in the solid waste landfill at Material Site 2 (MS-2) in accordance with Solid Waste Disposal permit 0132-BA003 and the *Teck Cominco Biosolids Project Plan*. The permit proposes to allow continued disposal of the created sludge/biosolids from the STP by co-incineration.

40 CFR 503.6 states that disposal of biosolids by means of co-incineration are not covered by 40 CFR Part 503. However, compliance with the CWA and 40 CFR 122.21(d) must be assured.

C. Monitoring and Reporting

The draft permit requires quarterly monitoring for biosolids. Biosolids shall be monitored for beryllium, mercury, arsenic, cadmium, chromium, lead, and nickel. These monitoring requirements are necessary to protect the public health under Section 405 of the CWA. These pollutants would be regulated if the biosolids were incinerated alone. Therefore, they are of interest whenever biosolids are incinerated. A major change in the biosolids metal content could create unacceptable emissions at the incinerator.

Facility biosolids records (and an annual report) containing information on the location of the facilities handling and receiving the biosolids, the quality of the biosolids, and amounts of biosolids being handled are necessary to demonstrate compliance with the permit and provide minimum information needed for inspections.

D. General Biosolids Requirements

To ensure compliance with the CWA, 40 CFR 122.21(d), and 40 CFR 503 at all times, the draft permit contains the following requirements.

1. Health & environment general requirement

The Permittee shall handle and use or dispose of the biosolids to ensure

the protection of human health and the environment. The CWA requires that the environment and public health be protected from toxic effects of any pollutants in sludge.

2. Protection of surface waters from biosolids pollutants

Section 405(a) of the CWA specifically prohibits any practice where biosolids removed in a treatment works at one location would ultimately enter surface waters at another location without a specific permit. In this case, biosolids removed from sewage treatment plants other than the PAC and ConPAC (at the mine) may not be incinerated under this permit.

3. Use/disposal contingency plan

According to the CWA, biosolids operations must comply with 40 CFR 503 and the effluent limits at all times, therefore the Permittee is required to address the possibility that the co-incinerators may not be able to accept biosolids for a period of time. Since treatment processes are dependent on mechanical systems, there is a potential for periods of breakdown, major repair, or maintenance. Also, Alaska communities have a potential for earthquakes, which might damage the biosolids treatment or disposal system(s). The Permittee submitted and received EPA approval on a Biosolids Project Plan during the previous permit cycle, which included a Biosolids Contingency Plan. In the event that the primary biosolids disposal method is unavailable, one of the following methods shall be employed to dispose of or treat biosolids: (1) co-incineration in a secondary incinerator, (2) land disposal in a monofill, (3) disposal in the mine site sewage treatment system, (4) lime treatment.

4. Suspend delivery upon regulatory notice

The draft permit requires that delivery of biosolids be suspended if the co-incinerators have problems or issues that need to be corrected to prevent a potentially harmful environmental situation. In this case, the programs to permit and operate the co-incinerators may need to restrict the times, methods, equipment of delivery, and handling procedure, or require temporary storage or stockpiling or additional processing before incineration. The EPA may require the facilities to suspend delivery of biosolids upon a receipt of a written request from another regulatory agency or information that the incinerator is out of compliance with its air pollution control permit. If this request or noncompliance information is received by either the biosolids generator or recipient, the Permittee must deliver a copy of the request or noncompliance information to the EPA within 48 hours.

5. Biosolids plan changes

Under the NPDES rules, the Permittee must apply for a major permit modification 180 days before making a major change in biosolids management (40 CFR 122.21). Any activity other than the approved primary biosolids disposal method or a method approved in the biosolids contingency plan is considered a significant new biosolids activity and the procedures for a major permit modification must be followed. Major changes in biosolids management may be cause for modification, revocation, or reissuance of the permit.

VIII. MONITORING REQUIREMENTS

Under Section 308 of the CWA and 40 CFR 122.44(i), the EPA must include monitoring requirements in the permit whenever necessary to determine compliance with effluent limitations, assist in the development of effluent limitations, and assess the quality of receiving waters. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The draft permit contains effluent, ambient, and whole effluent toxicity monitoring requirements.

A. Quality Assurance Plan (QAP)

Under 40 CFR 122.41(e), the Permittee must properly operate and maintain all facilities that are used by the Permittee to achieve compliance with the conditions of the permit. This regulation also requires the Permittee to ensure adequate laboratory controls and appropriate quality assurance procedures. Quality assurance requirements apply to all permit required monitoring, including sample collection, handling, and shipment, on-site continuous and daily measurements, laboratory analysis, and data reporting and storage. The Permittee is required to amend the QAP whenever there is a modification in the sample collection, the sample analysis, or any conditions/requirements that are not specified in the existing QAP.

The permit proposes that the Permittee amend the QAP to include the elements of an updated Ambient Monitoring Program, including monitoring for total recoverable, total (mercury), and dissolved metals and finding an appropriate method to analyze ambient copper (See Sections VI.C.6. and VIII.F.).

The amended QAP shall be submitted with the updated Ambient Monitoring Program Plan to EPA and ADEC for review within 90 days of the effective date

of the permit.

B. Outfall 001: Monitoring of Sewage Treatment and Desalination Plants

To assure compliance with the effluent limitations set forth in the draft permit, the Permittee is required to monitor the influent (for BOD_5 and TSS) and effluent from Outfall 001 at the frequency specific in Table VIII-1. Effluent monitoring of copper and dissolved oxygen in outfall 001 are new requirements of the permit. The information from the monitoring will help determine whether or not limits should be established. Effluent monitoring of total residual chlorine has not been required since the 2002 Order discussed in Section D.1.e. above. Table VIII-1 presents the required monitoring parameters, sample points, frequencies, and sample types.

As per EPA's April 1996 *Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies*, the facility is eligible for performance-based reduction of secondary treatment-related monitoring (BOD_5, TSS, and fecal coliform). Effluent data from the past two years has shown the facility to be in 100 percent compliance with effluent limitations, and the ratio of the long-term average (LTA) of the effluent data to the average monthly limit (AML) is less than 25 percent. The proposed monitoring is also in agreement with monitoring in the NPDES general permit titled "Small Publicly Owned Treatment Works (POTW) and Other Small Treatment Works Providing Secondary Treatment of Domestic Sewage and Discharging to Marine Water," NPDES Permit No. AKG-57-1000. Monitoring for dissolved oxygen was also taken from the above general permit, and the frequency is the same as the permit requires for facilities with a design flow above 0.005 mgd and up to 0.25 mgd.

TABLE VIII-1. Monitoring Requirements for Outfall 001

Parameter[1]	Sample Location	Sampling Frequency	Sample Type
BOD_5 (mg/L)[2]	Influent Effluent	1/month	24-hour Composite

TABLE VIII-1. Monitoring Requirements for Outfall 001			
Parameter[1]	Sample Location	Sampling Frequency	Sample Type
Total Suspended Solids (mg/L)[2]	Influent Effluent	1/month	24-hour Composite
Fecal Coliform (#/100 ml)	Effluent	1/month	Grab
Dissolved oxygen (mg/L)	Effluent	1/month	Grab
pH (s.u.)	Effluent	3/week	Grab
Total Residual Chlorine (μg/L)	Effluent	3/week	Grab
Flow	Influent or Effluent	Continuous	Recorder
Salinity (ppt)	Effluent	1/month in June, July, August, and September	Grab
Cadmium (μg/L)[3]	Effluent	1/month in June, July, August, and September	24-hour Composite
Copper (μg/L)[3]	Effluent	1/month in June, July, August, and September	24-hour Composite
Lead (μg/L)[3]	Effluent	1/month in June, July, August, and September	24-hour Composite
Zinc (μg/L)[3]	Effluent	1/month in June, July, August, and September	24-hour Composite

Notes:

1. If the discharge concentration falls below the MDL, the Permittee shall report the effluent concentration as "less than {numerical MDL}" on the DMR. Actual analytical results shall be reported on the DMR when the results are greater than the MDL. For averaging, samples below the MDL shall be assumed equal to zero. The Permittee shall report the number of non-detects for the month in the "Comment Section" of the DMR.
2. Percent Removal Monitoring: The percent BOD_5 and TSS removal will be reported on each monthly DMR form.
3. Cadmium, copper, lead, and zinc shall be analyzed and reported as total recoverable.

C. Outfall 005: Monitoring of Mine Drainage Past the Concentrate Storage Buildings

To assure compliance with the effluent limitations set forth in this permit, the Permittee is required to monitor the discharge at the frequency specified in Table VIII-2 during discharge events. The table presents the required monitoring parameters, frequencies, and sample types.

TABLE VIII-2. Monitoring Requirements for Outfall 005

Parameters[1]	Sample Location	Sampling Frequency	Sample Type
Copper (μg/L)[2]	Effluent	1/week	24-hour Composite
Zinc (μg/L)[2]	Effluent	1/week	24-hour Composite
Lead (μg/L)[2]	Effluent	1/week	24-hour Composite
Cadmium (μg/L)[2]	Effluent	1/week	24-hour Composite
Mercury (μg/L)[3]	Effluent	1/week	24-hour Composite
Total Suspended Solids (mg/L)	Effluent	1/week	24-hour Composite
pH (s.u.)	Effluent	1/day	Grab
Flow (mgd)	Effluent	Continuous	Recorder

Notes:

1. If the discharge concentration falls below the MDL, the Permittee shall report the effluent concentration as "less than {numerical MDL}" on the DMR. Actual analytical results shall be reported on the DMR when the results are greater than the MDL. For averaging, samples below the MDL shall be assumed equal to zero. The Permittee shall report the number of non-detects for the month in the "Comment Section" of the DMR.
2. Copper, zinc, lead and cadmium shall be analyzed as total recoverable.
3. Mercury shall be analyzed as total.

D. Minimum Detection Levels

Method Detection Levels (MDLs) are minimum levels that can be accurately detected by specific analytic test methods. However, rather than prescribe the specific test methods that might monitor to unnecessarily low levels, the draft permit requires effluent test methods that can achieve method detection limits (MDLs) less than the effluent limitations.

The draft permit requires an updated ambient monitoring plan (see VIII.F.) Ambient test methods shall achieve MDLs that can measure to at least one-fifth of

the state's chronic criteria. Table VIII-3 presents the metals detection levels for ambient monitoring. Adherence to this list will ensure consistency over the period of analysis.

TABLE VIII-3. Ambient Monitoring Detection Levels

Parameter	Detection Level
Cadmium (µg/L)	1.8
Lead (µg/L)	1.6
Zinc (µg/L)	16.2
Copper (µg/L)	0.6
Mercury (µg/L)	0.2

E. Whole Effluent Toxicity Testing

Whole effluent toxicity (WET) is the aggregate toxic effect of an effluent as measured directly by a toxicity test. Under 40 CFR 122.44(d)(1)(v), permits must contain limits on WET when a discharge has reasonable potential to cause or contribute to an exceedence of the water quality standard. The draft permit requires WET testing to evaluate the toxic effects of the effluent on living organisms.

Alaska regulation 18 AAC 70.030, states that effluent may not impart chronic toxicity to aquatic organisms, expressed as 1.0 chronic toxic unit. The TSD recommends using a value of 0.3 TU_a as a measure of acute toxicity in addition to the State's chronic criteria.

In the previous permit, it was determined that because of the deep outfall within the Chukchi Sea and available dilution, acute testing was more protective of the 1.0 chronic toxicity unit (TU_c) than chronic testing. This determination was based on calculations found in Chapters 1 and 5 of the TSD.

Therefore, the previous permit required completion of acute WET testing by the third year of the effective date of the permit. Testing occurred during the months of June, July, August, and September. Monitoring and LC_{50} tests of fish populations and invertebrates were done using test samples before the point-of-discharge to the Chukchi Sea.

Acute tests were done on two species, *Americamysis bahia*, a mysid shrimp, and *Atherinops affinis*, a topsmelt. The first test in 2001 showed slight toxicity for *A. bahia* in both outfalls 001 (1.73 acute toxic units, TU_a) and 005 (1.63 TU_a). The

A. affinis test on outfall 001 also resulted in slight toxicity (1.31 TU_a). The remainder of the tests in July, August, and September of that year showed no further toxicity. However, for each *A. affinis* test conducted, the lab failed to maintain sufficient control survival to conclude successful tests. Communications from the facility noted the opinion of the Study Director that the results reflected a lack of acute toxicity despite the control mortality. Upon consultation with EPA, the facility decided to repeat the *A. affinis* testing in 2002. The tests were repeated in June, July, August, and September and detected no toxicity.

Based on *A. bahia* data from 2001 and *A. affinis* data from 2002, no reasonable potential was determined for either outfall to exceed 0.3 TU_a at the edge of the acute mixing zone (See Appendix B). The proposed permit shall therefore contain a requirement for one year of acute WET testing with results to be submitted with the application for permit renewal.

F. Ambient Monitoring Program

The draft permit requires the Permittee to determine an ambient monitoring site representative of background conditions in the Chukchi Sea and to conduct ambient water quality monitoring for salinity; dissolved oxygen; total recoverable and dissolved cadmium, lead, zinc, and copper; and total and dissolved mercury. Monitoring for total recoverable or total metals will allow comparison with the effluent limits, which are required to be in terms of total recoverable. Monitoring for dissolved metals in addition to total recoverable or total will allow comparison with the State water quality criteria.

The draft permit requires the Permittee to submit an updated Ambient Monitoring Program Plan and an accompanying QAP amendment for review within 90 days of the effective date of the permit. The updated plan must address issues such as determination of an appropriate sampling location, temporal and spatial capability in the receiving water, appropriate sampling and analytical methods for total recoverable (or total for mercury) and dissolved metals, including appropriate copper analysis, analytical variability, and quality assurance/quality control for sampling and analysis. Clean techniques shall be included, if necessary. The Permittee shall begin implementation of the plan within 30 days of submittal or during the first 30 days of the next open water season if submitted while the Chukchi Sea is frozen.

Based on the results of this study, the EPA can reevaluate the permit limits for possible revision upon permit renewal. Table VIII-4 presents the ambient monitoring parameters and frequency.

TABLE VIII-4. Ambient Monitoring Requirements

Parameter	Monitoring Frequency

Cadmium, (μg/L)	Once in June, July, August and September
Copper, (μg/L)	Once in June, July, August and September
Lead, (μg/L)	Once in June, July August and September
Mercury, (μg/L)	Once in June, July August and September
Zinc, (μg/L)	Once in June, July August and September
Dissolved oxygen (mg/L)	Once in June, July August and September
Salinity (ppt)	Once in June, July, August and September

IX. OTHER PERMIT CONDITIONS

A. Best Management Practices (BMPs)

Pursuant to Section 402(a) of the CWA, BMP plans may be included as conditions in NPDES permits. Section 402(a)(1) of the CWA allows the Administrator to prescribe conditions in a permit determined necessary to carry out the provisions of the CWA. BMPs are one such condition. Section 402(a)(2) authorizes the EPA to include miscellaneous requirements in permits on a case-by-case basis which are deemed necessary to carry out the provisions of the CWA. Based upon the aforementioned statutory authorities, the EPA promulgated regulations which provide for BMPs to be used "to control or abate the discharge of pollutants when numeric effluent limitations are infeasible" (40 CFR 122.44(k)(2) and (3)).

Currently, the facility's Plan incorporates elements of pollution prevention as set forth in the Pollution Prevention Act of 1990 (42 U.S.C. 13101), including a Storm Water Pollution Prevention Plan (SWPPP). The plan is intended to achieve the following objectives: minimize the quantity of pollutants discharged from the facility, reduce the toxicity of discharges to the extent practicable, prevent the entry of pollutants into waste streams, and minimize mine drainage contamination. The Plan also includes procedures for controlling spills during storage, transfer or loading activities; spill containment and clean up procedures; the prevention of substances other than the desalination brine (resulting from the reverse osmosis process) be discharged to outfall 001; and the optimization of chemical use.

Pursuant to 40 CFR 122.26, storm water runoff from the road is regulated via BMPs. The nature of the exposed materials along the road indicates the mine drainage discharges should not adversely affect water quality (assuming appropriate design and implementation of BMPs) therefore the draft permit does not require monitoring of individual culverts along the access road. The Permittee is required to conduct routine inspections and an annual comprehensive site evaluation to evaluate whether actions to reduce pollutant loadings to waters identified in the Plan are adequate and properly implemented.

The Plan shall be amended whenever there is a change in design, construction, operation, or maintenance which affects the potential for an increased discharge of pollutants to waters of the U.S. or if the Plan proves to be ineffective in achieving the general objectives of controlling pollutants in mine drainage discharges. If the road discharges are determined to be a significant source(s), the permit may be modified to include specific effluent limitations, additional monitoring requirements, and/or specific additions to the BMP Plan to reduce the pollutant discharge(s). The effectiveness of BMPs will be measured through regular inspections.

Update of the BMP Plan to include BMPs to Control Fugitive Dust Emissions while Loading Barges and Ships

Fugitive dust emissions from the loading operations of ore concentrate onto barges and oceangoing vessels at the Port Site have been the basis for EPA enforcement action against the facility since the previous BMP plan was submitted. These discharges shall be further reduced in the proposed permit through BMPs required in an updated BMP plan.

The updated plan shall include BMPs designed to prevent, minimize and eliminate, where feasible, fugitive emissions from the conveyance and loading of ore concentrate to barges and oceangoing vessels for shipping. The Permittee shall submit to EPA and ADEC for review and EPA approval an updated BMP plan and schedule for implementation within 180 days of the permit effective date. If EPA does not respond within 60 days, the plan shall be deemed approved. The final BMP plan shall be submitted to ADEC. Examples of BMPs include records of fugitive emissions, visual inspections, receiving water sampling if emissions are observed, and corrective actions to be taken. Guidance can be found in EPA's October 1993 *Guidance Manual for Developing Best Management Practices*.

B. Unauthorized Discharges

In order to clarify Permittee responsibilities regarding the potential discharge of pollutants and/or waste streams not listed in the permit application, the permit expressly prohibits discharges of waste streams that are not part of the normal operation of the facility as disclosed in the permit application with the exception of the mine ConPAC biosolids.

C. Representative Sampling

The requirement in the federal regulations regarding representative sampling (40 CFR 122.41[j]) has been expanded and specifically requires sampling whenever a

bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could easily miss permit violations and/or water quality standards exceedences that could result from bypasses, spills, or non-routine discharges. This requirement directs the Permittee to conduct additional, targeted monitoring to quantify the effects of these occurrences on the final effluent discharge.

D. Compliance Upon Permit Issuance

All permit limits will apply on the effective date of the permit.

X. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Oceanic and Atmospheric Administration (NOAA Fisheries, formerly National Marine Fisheries Service (NMFS)) and the U.S. Fish and Wildlife Service (USF&WS) regarding potential effects an action may have on listed endangered species. In a letter dated November 18, 1997 the NMFS indicated that there were no endangered species likely to occur within the project area or the near shore waters of the Chukchi Sea. Offshore, the endangered bowhead whale and Steller or northern sea lion occur seasonally in the Chukchi Sea. In a letter dated November 3, 1997 the USF&WS identified the spectacled eider (Somateria fischeri) and the steller's eider (Polysticta stelleri) as threatened species in the areas of the discharge. In addition to these species, at that time, the USF&WS listed the arctic peregrine falcon (Falco peregrinum tundrius) as a species of concern.

The EPA has prepared a draft biological evaluation (BE) for the facility's discharge to the Chukchi Sea (Appendix E). Species included in the BE are the short-tailed albatross, spectacled eider, Steller's eider, bowhead whale, fin whale, and humpback whale. The EPA sent letters dated February 18, 2005, to NOAA Fisheries and USF&WS, informing the Services of the BE and asking for any additional species to be considered. USF&WS has indicated that they might require formal consultation.

Based on a more restrictive draft permit and the findings of the BE, the EPA has determined that the discharges authorized by this permit may affect, but are not likely to adversely affect the endangered or threatened species. The EPA will provide NOAA Fisheries and USF&WS with copies of the draft permit and fact sheet during the public notice period. Any comments received from these agencies regarding this determination will be considered prior to reissuance of

this permit.

B. State Certification

Since state waters are involved in this permitting action, the provisions of Section 401 of the CWA apply. In accordance with 40 CFR 124.10(c)(1), public notice of the draft permit has been provided to the Alaska agencies having jurisdiction over fish, shellfish, and wildlife resources. The notice shall also serve as a public notice of the intent of the State of Alaska DEC to consider certifying that the subject discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306, and 307 of the Clean Water Act.

EPA has incorporated the mixing zones into the draft permit that were provided by ADEC in a draft certification. The State will be asked to certify these mixing zones used in calculating the effluent limitations in the draft permit. If certification of the mixing zones is not provided, the limitations in the permit will be recalculated based on meeting water quality standards at the point of discharge. If certification of the mixing zones reflects a different level of dilution than that used to develop the draft permit limits, the limitations will be recalculated to reflect the certified information.

C. Coastal Zone Management Act (CZMA)

On November 13, 1998 this project was found to be consistent with the Alaska Coastal Management Program (ACMP). According to the current regulations, 11 AAC 110.830, projects found to be consistent do not have to undergo another consistency determination process unless a modification is proposed. Although some of the draft permit conditions are different from the conditions in the previous permit, Alaska regulations at 11 AAC 110.820(k)(3) and (4) state that modifications that decrease the impact of the project without a change in purpose or that are within the scope of the original project that was reviewed are not subject to further consistency review.

The level of activity at the site is the same as it was when the project was last reviewed in 2000. The draft permit authorizes the discharge of only those pollutants resulting from processes, waste streams and operations identified in the most recent application. For all pollutants, effluent limits in the draft permit are as stringent or more stringent than limits in the previous permit. Those effluent limits and monitoring requirements that have been eliminated in the draft permit have been shown to be unnecessary, since the Red Dog Port Site facility discharge has no reasonable potential to cause or contribute to an exceedence of water quality standards for the pollutants in question.

EPA believes that the modifications proposed from the previous permit to the draft permit are within the scope of the previous project review, and that the more

stringent effluent limits in the draft permit will decrease the impact of the project. Therefore, pursuant to 11 AAC 110.820(k)(3) and (4), consistency review is not required for this permit reissuance.

D. Storm Water

Since storm water is regulated within the individual NPDES permit via collection and treatment of mine drainage (outfall 005) and implementation of Best Management Practices (BMPs) for haul road runoff, the facility shall not be required to obtain an NPDES Multi-Sector Storm Water General Permit at this time.

The proposed permit does not authorize discharges of construction storm water runoff. Construction storm water discharges are subject to the conditions of the General NPDES Permit for Storm Water Discharges Associated with Construction Activities, and are subject to the requirements and limitations therein (February 17, 1998, 31 FR 7858-8014).

E. Permit Term

The permit shall expire five years from the effective date.

Prepared by Lisa Olson, EPA Region 10, April 15, 2005